

THE TRANSPORT RESEARCH KNOWLEDGE CENTRE: DISSEMINATING THE RESULTS OF EUROPEAN RESEARCH IN TRANSPORT

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ABSTRACT

The Directorate General for Energy and Transport of the European Commission launched in 2002 a project to develop a web site, the Transport Research Knowledge Centre, providing information and analysis on research funded at European level and research in the individual countries of the European Research Area. This paper focuses on the process of establishing and developing the European Transport Research Knowledge Centre. It outlines the concepts and previous experiences on which the development of the Knowledge Centre was built, the processes for the collection of research information and the challenges in collating and interpreting it. The paper is intended to show how results are collected, reported and analysed using a dedicated web site portal and to inform readers about some of the main outputs available on this portal.

The Knowledge Centre reports information on research projects in a harmonised way using standard forms providing basic factual information as well as information on results and policy implications of results. The collation of research information is further facilitated by the Thematic Research Summaries which provide an overview of results, and the evidence base, for a given theme. These documents, however, focus less on the policy implications or on the interaction between themes. To address the need for more policy-oriented documents, for those areas which the European Commission identified as of particular importance to policy, policy brochures are being produced, which draw on all of the themes of relevance to that area of policy.

While the Knowledge Centre should improve access to European transport research results, it still provides no guarantee that those results will be used effectively in practice. A small element of the consortium's work has therefore attempted to address the challenges of uptake of research results both by policy makers and by education.

Keywords: information systems, European Research Area, transport research programmes, transport research projects

INTRODUCTION

The Transport Research Knowledge Centre (TRKC) is a European project funded under the 6th Framework Programme and is a follow-up of EXTRA (1999-2001) and EXTR@Web (2002-2006) projects. The aim of the project is to promote and disseminate the results of transport research activities from the European Research Area to policy-makers, academics, industry and other relevant stakeholders. A web-based information portal, launched in EXTR@Web and previously hosted by the European Commission's server, has been moved to another Internet location and is now available at www.transport-research.info/web/index.cfm. It is being further developed to provide comprehensive information about on-going and completed transport research programmes and projects, transport events as well as thematic analyses of transport research results and their policy implications.

The TRKC project comprises the following activities:

- Gathering information on transport research programmes across the European Research Area as well as on selected international research programmes;
- Producing a Compendium of European and national research funding mechanisms;
- Populating and keeping up to date a project database of ongoing and completed European and national transport research projects;
- Producing summaries of main results and policy implications of EU-funded and national projects; categorising them into key thematic areas;
- Preparing thematic analysis reports on the results and policy implications of completed projects;
- Producing Policy Brochures presenting the highlights of the research results according to policy topics;
- Disseminating the TRKC deliverables at conferences, workshops, etc; contribute towards delivering the project's Dissemination Strategy;
- Exploring how to accelerate the application of research results.

This paper focuses on the process of establishing and developing the European Transport Research Knowledge Centre. It outlines the concepts and previous experiences on which the development of the Knowledge Centre was built, the processes for the collection of research information and the challenges in collating and interpreting it. The paper is intended to show how results are collected, reported and analysed using a dedicated web site portal and to inform readers about some of the main outputs available on this portal.

BACKGROUND

The importance of knowledge dissemination in the ERA

The Transport Research Knowledge Centre (TRKC) supports the development of the European Research Area (ERA), launched at the European Council of Lisbon in March 2000. The Council set the strategic objective of the EU becoming the most competitive and dynamic knowledge-based economy in the world. In order to achieve this, an approach was proposed to prepare the transition to a knowledge-based economy based on policies in the domains of information society and research and development.

The idea of the ERA stems from the recognition of the lack of a proper environment to stimulate research and exploit results and of the fragmented nature of activities and the dispersal of resources. The main aim of the ERA is to support co-operation initiatives in the

research sector. Further information on the ERA can be found on the web site of the Directorate General Research of the European Commission at http://ec.europa.eu/research/era/index_en.html

Databases and information systems have been recognised as important instruments available to the European Union to bring the ERA into being (1). One element of the European strategy for the ERA is therefore the creation of a shared knowledge base on the research activities carried out at international and national levels.

This serves the purpose of the ERA of creating an internal market in research and an area of free movement of knowledge and technology, at the same time increasing co-operation, stimulating competition and achieving a better allocation of resources. By enabling access to outputs of research activities, the knowledge base has an impact on both the research conducted and the exploitation of research results whether by public policy makers or decision makers in the industry.

The knowledge base should, therefore:

- help ensure that research is conducted efficiently, by reducing the risks of duplicating efforts,
- facilitate the transfer of good practice across Europe,
- help ensure that opportunities for new products or technology transfer are recognised and highlighted.

In addition, the knowledge base should have an impact for the EU policy making process by improving the co-ordination of national research activities and policies. Co-ordination aims at promoting a consensus on research priorities of common interest and drawing together work on common problems. As an example, by knowing who is doing what, the European Commission can prepare studies or call for tenders with the relevant professionals. Last but not least, knowledge about new research approaches should help enhance the quality of future research programmes. It is therefore important to ensure that “reliable, affordable and permanent access to, and widespread dissemination of, scientific research results [...] become defining principles for Europe’s research landscape” (2).

History of the Transport Research Knowledge Centre

EXTR@Web was the predecessor of the TRKC project and itself followed a previous project called EXTRA (Exploitation of Transport Research) funded within the Transport Programme of the Fourth Framework Programme (FP4). EXTRA had developed a web site, which was restricted to the research projects (more than 270) funded within the FP4 Transport Programme of former DGVII (Transport) of the European Commission. The projects covered seven sectors: strategic research, rail transport, integrated transport chain, air transport, urban transport, waterborne transport, road transport. Items such as project summaries, downloadable final reports of research projects, thematic overviews and policy brochures

were uploaded to the website and made available to users of research information. The Directorate General for Energy and Transport of the European Commission launched in 2002 an initiative to develop a web site providing information and analysis on transport research in Europe. The development of the website started in a project called EXTR@Web (Exploitation of Transport Research Results Via the Web), funded within the Key Action “Sustainable Mobility and Intermodality” of the Growth Programme of the Fifth Framework Programme. A European consortium of academic and industry organisations and consultancies was established to deliver the project. The project aimed to provide and promote a virtual knowledge centre, the Transport Research Knowledge Centre (TRKC) where policy-makers, researchers and other stakeholders find structured and user-friendly access to transport research across Europe. The Knowledge Centre was established to support research activities and the policy-making process by providing a permanent archive of research results and the related policy implications for transport research funded at European level and selected transport research funded in the individual countries of the European Research Area.

Other, complementary aims of the EXTR@Web project were:

- to provide an electronic hub for inter-connecting European and national research programmes into an easily navigable European network;
- to establish a common scheme for the structure and content of the reporting of transport research results;
- to provide analytical outputs that are structured and tailored according to the needs of policy makers;
- to raise awareness of the new service (3).

A follow-on project, the Transport Research Knowledge Centre (TRKC), has been funded under the 6th RTD Framework Programme. The Transport Research Knowledge Centre is a three-year project (2007-2010) funded by the European Commission’s Directorate-General for Energy and Transport (DG TREN) which is maintaining and enhancing the Knowledge Centre, and extending it to cover research in the 6th and 7th Research Framework Programmes.

How unique is TRKC?

The Transport Research Knowledge Centre (TRKC), subsequently further developed by the EXTR@Web and TRKC projects, is intended to play in Europe the role that in the US is played by the Research In Progress (RIP) web site of the Transportation Research Board (TRB) where a database of research projects throughout the US is maintained and updated on a continuous basis.

The Research in Progress website allows users to:

- Search the entire Research in Progress file by various fields
- Browse project records by subject
- Use a look up directory for individuals and organizations
- Subscribe to receive e-mail notification of new RiP records in specific subject areas
- Submit current research projects.

Authorized individuals can also:

- Add, modify, and delete RiP records
- Submit Research in Progress records using a data entry form or batch load (<http://rip.trb.org/>).

The RIP web site provides for each project a record of basic information including abstract, start and end dates, status (proposed, planned, active, inactive, terminated, completed) and source organisation. The user can then have access to a detailed view including funding, details of the contract, contacts in the sponsor and performing organisations. Researchers can provide data on their projects on-line. No analysis of research results is provided.

No facility with a scope and coverage similar to the TRKC exists today in Europe, where the only example of a web site which collects EU-wide research results is the German FIS (Forschungs-Informationssystem) (<http://www.forschungsinformationssystem.de>) which is a proprietary, restricted-access system of the Federal Ministry of Transport, Building and Housing. The FIS, however, implements a top-down approach where research findings are presented to respond to specific policy questions. Traceability allows the user to know the source of every statement, and to check that information is not becoming out-of-date. In addition, policy views from governments are reported on which may differ from policy implications identified within the research.

Information on research is found on the web sites of the main European programmes such as the Framework Programmes for research, technological development and demonstration of the European Commission (<http://cordis.europa.eu/>), and the international co-operation programme for market-oriented and industrial research EUREKA (<http://www.eureka.be>). Forms of individual projects are included with a focus on objectives and contact details of the participants. Only partial information on the results of the projects is included.

APPROACHES TO THE COLLATION OF RESEARCH INFORMATION

What is meant by 'Transport Research'?

For the purposes of the Knowledge Centre, transport is defined as the means by which a person or material of any kind is passed from its point of origin to point of destination, comprising users, vehicles, infrastructure, transport system, the interaction of users, vehicles and infrastructure, the impacts of transport and relevant tools.

Research is defined as creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of humanity, culture and society, and the use of this stock of knowledge to devise new applications.

Transport research comprises studies, technical development and demonstrations concerning passenger or freight transport by any mode, or a combination of modes. It does not however include projects dealing with implementation or construction (unless such projects have significant implications for policy).

Coverage of research programmes

The TRKC Reporting scheme comprises separate forms for Programmes and Projects. There is no clear 'official' distinction between the two. A large project with several sub-projects could perhaps be seen as a programme. However, for the purposes of TRKC, a programme can be:

- a formal grouping of projects, funded by the same organisation (e.g. a ministry);
- a formal grouping of projects, funded by a group of organisations, with a common overarching objective and, usually, a similar funding structure; or
- an 'informal' grouping of projects funded by the same organisation.

Some programmes covered include aspects unrelated to transport. This is for instance the case for some national programmes with a wide scope that may deal with several themes at once. It also applies to programmes related to another theme (e.g. the environment, health or land-use) that may include some transport-related projects. Such programmes are included in the Knowledge Centre, but a focus is given to their transport content.

Information on European programmes (and their related projects) is collected by the partners of the TRKC consortium, with the help of research programme managers and research project co-ordinators. The TRKC consortium also collects information about national programmes (and projects) covering 32 countries (EU 27 + Norway, Switzerland, Iceland, Turkey and Croatia).

Thematic structure

The considerable variety of transport research made it necessary to structure the domain by subject area, to permit simple search facilities for individual projects and appropriate policy analysis. The subject area was categorised into four dimensions (sectors/geographic ambits, modes, sustainability policy objectives and tools) and 30 themes, as shown in Table I.

TABLE I - TRKC Thematic Structure

<i>The Four Transport Dimensions</i>			
Sectors	Modes	Sustainability Policy objectives	Tools
1.1 Passenger transport	2.1 Air transport	3.1 Economic aspects	4.1 Decision-support tools
1.2 Freight transport	2.2 Rail transport	3.2 Efficiency	4.2 Financing tools
Geographic	2.3 Road transport (incl. walking and cycling)	3.3 Equity and accessibility	4.3 Information and awareness
1.3 Urban transport	2.4 Waterborne transport	3.4 Environmental aspects	4.4 Infrastructure provision (incl. TENs)
1.4 Rural transport	2.5 Innovative modes	3.5 User aspects	4.5 Integration and policy development
1.5 Regional transport	2.6 Intermodal freight transport	3.6 Safety and security	4.6 Intelligent Transport Systems
1.6 Long-distance transport			4.7 Regulation/deregulation
1.7 EU accession issues			4.8 Land-use planning
			4.9 Transport management
			4.10 Pricing and taxation
			4.11 Vehicle technology

Definitions of each theme are available at the Knowledge Centre's website at http://www.transport-research.info/web/projects/transport_themes.cfm

Collecting information on projects

A project is an action that produces results, which may be part of a formal or 'informal' programme, and is carried out either internally or by the funding organisation or by a contractor or consortium. A large project may have several sub-projects. The key difference between a programme and a project is that a programme does not in itself produce results (although it may bring together the results of its constituent projects). Rather, a programme is essentially a structure or mechanism under which research projects are awarded, funded and managed.

Once a research project starts, TRKC collects information about the project. This is done through a consistent and harmonised data collection tool, which has been developed by the project. The tool has been validated by the European Commission and an Advisory Group of national transport representatives. Data on projects is collected in one single form at various

stages of a project (project start, interim results and final results after a research project has been completed). This form is subsequently linked to the project's own Final Report.

Project coordinators are invited to submit information about their own projects via the project form of the data collection tool, the Extranet facility, available at <http://www.transport-research.info/extranet>. This should be done at the beginning of a project and when a project is successfully completed. Any major interim results can also be reported. An offline project form has been developed and sent directly to project coordinators asking them to complete the form and return it by email. In some cases the forms have been pre-filled by Consortium partners with information from sources available in the public domain. In the event of non-response, Consortium partners complete the forms themselves by using information from the final reports to produce the project profiles and results summaries. Even if partners resorted to this much more resource-consuming option, the availability of final reports remained an issue. Therefore partners also engage in searching for relevant information in the public domain or soliciting project coordinators to obtain final reports.

Analysis of the research information

Once a project is successfully completed and the TRKC has received the project's results from the project coordinator, or has collected these from other public sources, the results of the project are subjected to analysis. The analysis of the research information in the Knowledge Centre is conducted at three levels, as shown in Figure 1. The first level of analysis is concerned with identifying eligible projects, assigning up to five labels to them from the list of 30 themes listed in Table I and linking the project to the funding programme. The second level of analysis involves preparation of a project profile and a summary of the main results and the policy and/or technical implications of the research results. Where a final report is available and is not confidential, it is also uploaded to the Knowledge Centre. It is intended that other project documents such as handbooks and conference presentations can also be uploaded to the web site and made available to the end-users. The third level of analysis encompasses the preparation of Thematic Research Summaries and Policy Brochures, where the results collected, structured and analysed in the previous two stages are drawn together into papers offering thematic or policy priority analysis. The Project Profiles, Results Summaries, Thematic Research Summaries and Policy Brochures are outputs available to the users of the Knowledge Centre. More information on their preparation, purpose and structure is available in the section on outputs below.

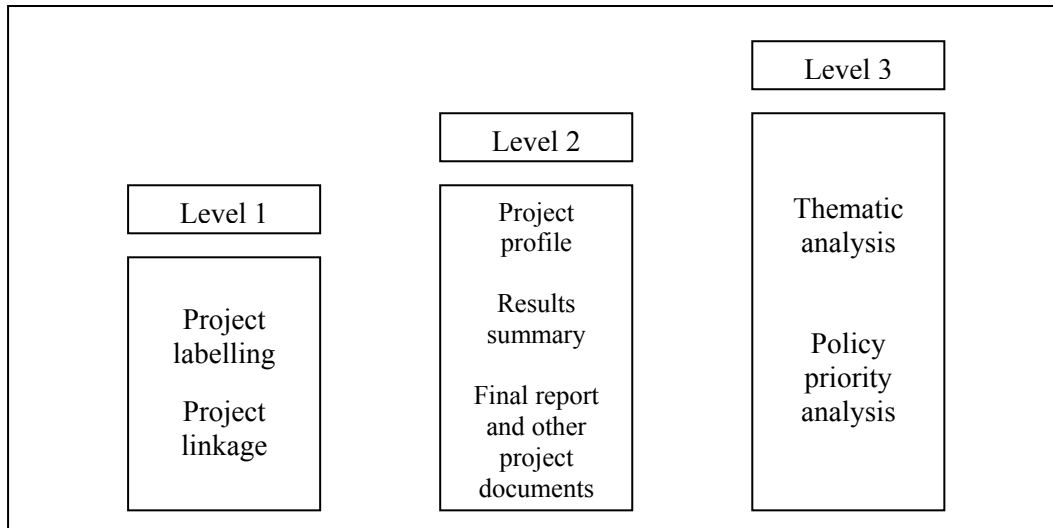


FIGURE 1 - Three levels of analysis of research information.

Coverage

Today, the TRKC portal provides access to some 300 transport research programmes and over 6,000 projects across the European Research Area. This existing stock of information is being continuously expanded, and we expect to exceed 7,000 project entries by mid-2010.

'Link of the links' activity

There exists an increasing number of organisations, initiatives and networks, all having their own websites backed with databases relevant for transport research. None of them has a complete record of information, many collect the same information, there is no harmonised way to present the information, and there are a few tests of information quality. The user is thus confronted with an increasing workload to search numerous websites to obtain relevant and reliable research results.

Consequently TRKC has developed an appropriate "link of links" facility which is designed to cover all major sources of transport research results. Two pilots of the process have been conducted with the research reports produced by POLIS, and the much more extensive database maintained by ELTIS (4). These have demonstrated the feasibility of the process, but also the scale of the task.

OUTPUTS

The Knowledge Centre and its predecessors have been developed through an extensive process of consultation with potential end users. The range of potential end users is considerable, spanning the spectrum from international to local government; politicians, practitioners and the public; academics, operators, vehicle manufacturers and system providers. Inevitably, the requirements of these different types of end user vary, and a wide

range of outputs has been developed to meet their needs. We describe the principal ones in this section, as follows:

- Project profiles
- Research summaries
- Thematic Research Summaries
- Policy Brochures
- The Research Compendium.

All five of these outputs are available on the website, but in addition the Policy Brochures and Research Compendium are being published as printed documents.

Project profiles

As noted above in section 3, the aim of the Knowledge Centre has been to include all projects funded by the European Commission which satisfy the definitions of transport and of research within the period of interest. In addition, the opportunity has been taken to include influential projects funded by national governments, particularly in subject area less well covered by European research. However, the coverage of national projects has been selective; a complementary programme being funded by the Research Directorate-General has the aim of recording national research in more detail.

Each project included in the website is initially summarized in a standard format, as illustrated in Figure 2. The standard information provided includes background and policy context, objectives, methodology, funding arrangements and contact information.

At the stage at which it is accepted into the website, each project is associated with a principal theme from the set of 30 themes described above (see Table I) and up to four secondary themes. It is this thematic structure which determines the material provided on the project, as described below, and its use in subsequent outputs. It is therefore important that the allocated themes effectively represent the principal focus of the project's research. Where possible, project coordinators were asked to check the project profile and allocated themes at the stage at which the project was entered into the website.

Users can then access an individual project in a number of ways: by entering its acronym, the institution which coordinated it, any partner involved in it, the research programme of which it formed part, or any of the themes to which it contributed.

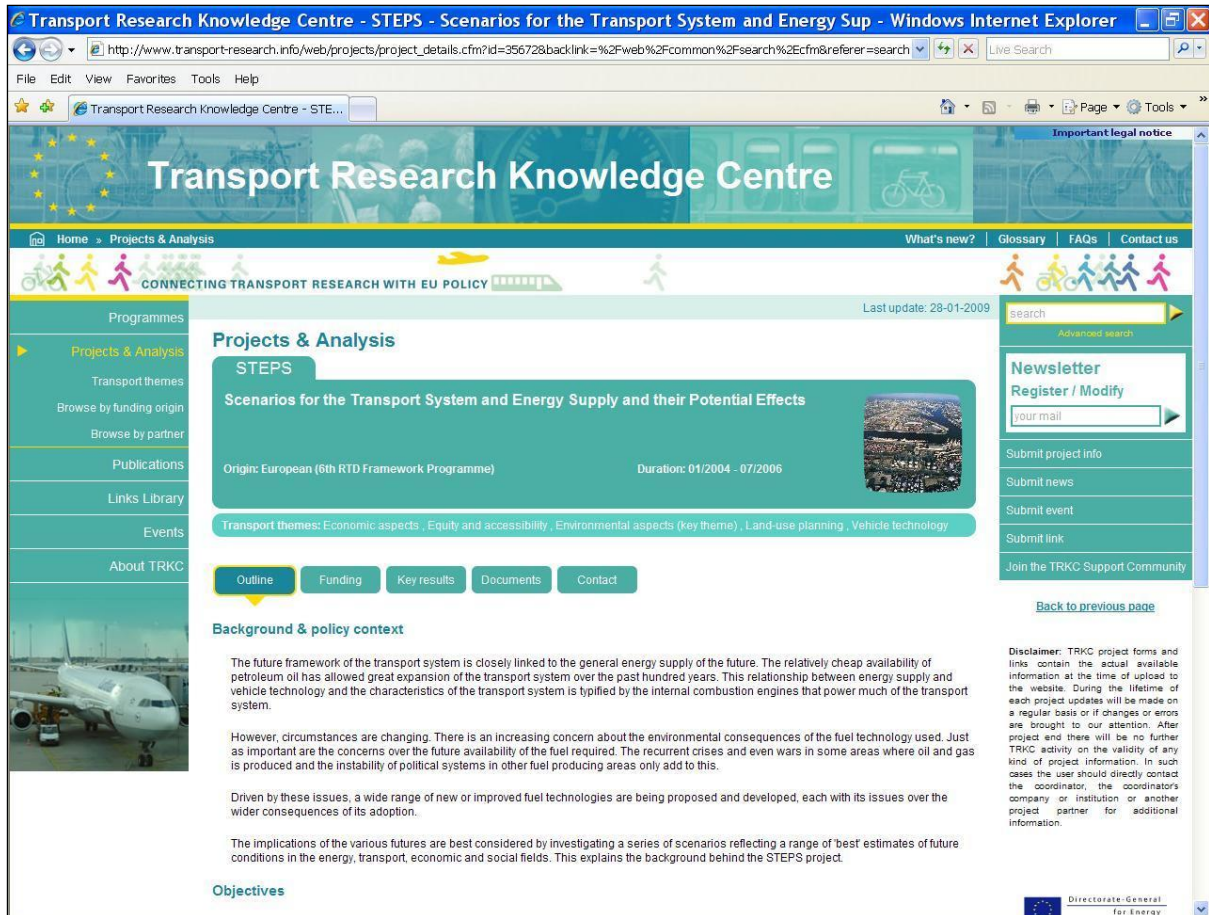


FIGURE 2 -Project form (with results) screen.

Results summaries

Once European funded research projects are complete, the coordinator is required to produce a final report, which is expected to summarise the key findings and implications of the research. Normally, such reports are expected within three months of the end of the project, although approval of these reports by the Commission will extend this period. Once the approved results are publicly available, a link is provided to them from the Knowledge Centre. However, few users will wish to study each project's final report in detail. To aid access, and to facilitate subsequent Knowledge Centre outputs, a results summary is provided in a standard format (accessible by selecting the 'key results' tab which can be seen in Figure 2). The facility is also provided for coordinators of longer research programmes to input interim research summaries in a similar format if they wish.

Thematic Research Summaries

A typical research theme may well have between 20 and 100 individual project results summaries, one for each of the projects assigned to that theme as either its principal theme or a secondary theme. Few users will wish to access all of this information and process it themselves. To aid end users, the TRKC consortium has developed a series of Thematic Research Summaries, which draw together the principal findings, particularly as they relate

to policy. These are designed for policy makers and researchers who need access to background material on recent research for a specific subject area, but need to understand the evidence base.

The structure of the Thematic Research Summaries has been developed as part of the preparation of the Knowledge Centre and its predecessors, and in discussion with end users. The current structure is shown in Table II. The sections outlining the policy background, the key results (and any disparity in those results) and their policy implications are considered key to structuring the documents.

TABLE II - Structure of the Thematic Research Summary Documents

Chapter (section)	Comment
Title page	A record of the title of the document, the authors and the publication date
Foreword	Brief statement of the TRKC aims and a short description of the adopted approach to the dissemination of results
Executive summary	Summary of the main findings for each sub-theme
List of acronyms and abbreviations	Self-explanatory
Table of contents	Self-explanatory
Introduction	Shows the position of the paper in the thematic classification scheme adopted in TRKC; provides an outline of the structure of the paper
Scope of the theme	Definition of the theme and the main topics included in it; the main sub-themes are listed
Policy context	Review of the policy documents related to the theme
Research findings	This chapter includes a summary of the research objectives, results and policy implications (for each of the sub-themes identified in the earlier sections); the implications for further research are also identified in this section.
References	Self-explanatory
List of projects by sub-theme (Annex)	An extensive list of the contributing projects showing their affiliation to the finding programme and web site (if available).

To date, interim Thematic Research Summaries have been produced for those themes for which the largest number of results summaries were available. These will all be updated in final form by mid 2010. The current versions can be accessed at <http://www.transport-research.info/web/publications/thematic.cfm>. In principle, each of the 30 themes will have a Thematic Research Summary. However, those themes for which there are the fewest research results will probably not justify a Thematic Research Summary in their own right. Instead the opportunity will be taken to merge them with cognate themes. As an example, the themes of pricing, financing and regulation/deregulation have been merged for this purpose.

The preparation of Thematic Research Summaries has been subject to a careful quality control process. The first, on Economic Aspects of Sustainable Mobility was prepared in draft to check that the structure (Table II) worked effectively, and that the material was of assistance to end users. Some modifications to the structure, contents and overall length were made as a result. Each draft was then checked by an internal reviewer among the partnership, and an external reviewer approved by the Commission.

Policy Brochures

While the Thematic Research Summaries provide an overview of results, and the evidence base, for a given theme, they focus less on the policy implications or on the interaction between themes. For those areas which the Commission identified as of particular importance to policy, policy brochures are being produced, which draw on all of the themes of relevance to that area of policy. The first of these, published in August 2009, was on transport and the environment (5). Once again, these are designed to a common structure, with sections covering:

- the subject area
- the policy background
- the research context
- research programmes which have funded the contributing projects
- research results
- European policy implications and
- future research developments.

However, they are shorter documents, designed for policy makers, typically with modules of two or four pages per topic, and with references to the supporting evidence from Thematic Research Summaries and from individual projects' Results Summaries.

The Research Compendium

The Compendium (6) is designed to provide an introductory guide to the research being undertaken in Europe and the ways in which that research is presented in the Knowledge Centre. The initial sections describe the process adopted for collating and summarizing the results of research projects, and the thematic structure adopted. This is followed by a section describing the elements of the European 6th and 7th Research Frameworks relevant to transport. The majority of the Compendium is a country by country description, for all countries in the ERA, of the institutions responsible for transport research and their current transport-related research programmes. Finally, the Compendium outlines the principal outputs of the Knowledge Centre: its Thematic Research Summaries and Policy Brochures.

Overview

This range of outputs from TRKC allows the user to access research results and background information in a number of ways. They can be interrogated by country or European Programme, starting from the Compendium, by theme, starting with the Thematic Research Summaries and Policy Brochures, or by project and partner. In all cases the material is designed to enable the user both to identify the specific results of individual projects and to place them in the wider context of policy-relevant European research.

OUTREACH ACTIVITIES

While the Knowledge Centre should improve access to European transport research results, it still provides no guarantee that those results will be used effectively in practice. A small element of the consortium's work has therefore attempted to address the challenges of uptake of research results both by policy makers and by education.

Encouraging the use of research for policy development

The structured access to programme and project information within the Knowledge Centre is designed to help the external user to identify information needed for policy development in a given research area. However, it does not ensure that policy makers will be aware of this new source of information, or be able to use it effectively.

The consortium investigated the use of internet platforms to bring together those having produced research results with those looking for alternative solutions to their specific policy problems. Such internet platforms require a strong and time consuming commitment by a moderator to ensure continued use and sustained quality of use, and are heavily dependent on the willingness of the actors to contribute continuously. The examples reviewed were not sustained and those interviewed said that, while they would use such a forum, they could not contribute to its maintenance due to time constraints.

Instead it was decided to conduct a pilot study with practitioners involved in a major European research project, CityMobil to gain a general overview of the information on research required by the cities involved, and their assessment of the outputs of the Knowledge Centre. Seven semi-structured interviews have been held in seven different countries covering a range of city attributes and geographical locations (7).

The survey found that cities' information needs depend heavily on the type and priority of activity being pursued. Solutions for urgent problems are found through involvement in formal or informal networks and personal contacts with specific experts. This was the cities' main reason to participate in CityMobil. Other information needs could be satisfied via appropriate internet solutions. The latter should not only allow the user to obtain information but also permit cities to propagate their plans and to broadcast their progress. A major factor in the attractiveness of the Knowledge Centre would therefore be the provision of up to date information, and especially the interim progress made in the various research activities.

For cities not yet being involved in EU networking, the current TRKC was judged to be already quite helpful in gaining access to existing transport research activities and corresponding results. A networking support element of TRKC has been recommended as an additional feature in future developments.

For the more experienced cities a TRKC based facility to share information with other cities in terms of actual plans of innovations and the experience made with these innovations would be desirable. The information given should not only be limited to rose-tinted success stories but also contain critical paths which could be avoided by other applicants of these solutions.

Links with education

One stream of activities of TRKC was dedicated to the use of the research results in education. One aim was to investigate the process of transfer of research results into education programmes at university level. Another aim was to provide recommendations to enhance such exploitation of research results. A web-based survey was conducted to assess the experiences and attitudes towards knowledge transfer (8). Responses came from 129 lecturers (12% response rate). Survey results were discussed in a workshop held in Rome in September 2007. A roadmap could then be outlined. The roadmap is structured according to concerns and related factual statements and recommendations.

A first concern relates to research to be prioritised for dissemination. A period is needed in which results from research are assimilated before being transferred into education. The assimilation is essentially an activity of pooling and comparing results from different sources. Thematic networks and coordination actions appear as first candidates for an education-targeted dissemination activity.

A second concern is awareness of research results. Although the surveys show an increasing use in university education of research results from EU projects (comparison between the 2007 TRKC survey and the 2001 PORTAL survey), the problem of lack of awareness still persists. An alerting system targeting lecturers could be put in place imitating the well-functioning alerting systems of scientific publishers. The system could inform lecturers when a product has been released by a project (e.g. a handbook or the results of a demonstration) or when a paper about a EU project has been published in a journal.

A third concern relates to products from research projects. It is unlikely that material produced by research projects can be directly transferred into course notes. An activity of “marketing” of research in the education community might be put in place with each research project producing a summary, preferably prepared by a lecturer, of the relevance to education of the results achieved. Presentations given in conferences should be given the same priority as final reports for dissemination.

A fourth concern relates to lecturers' preferences. In the absence of direct experience lecturers prefer papers in scientific journals as sources of information. Support should be provided for direct participation of lecturers in research projects. Actions able to increase the production of scientific papers and their awareness are recommended. Incentives for the production of papers from EU projects might take the form of bonuses in the evaluation of research proposals. The European Commission might sponsor the publication of a new web-based journal devoted to results from EU-funded research projects. The scientific publications originating from EU-funded projects should be monitored.

A final concern relates to communication. There is a problem of overload of information coming from research. Lecturers have expressed a need for being helped in knowing "what is available where" about transport research in the internet. It was suggested to integrate in the TRKC portal a functionality to help find desired information in various on-line databases. Another perceived problem is the loss of documentation from projects due to discontinued project web site. Research results remain of interest for several years after their release. Archiving full documentation from research projects and making it accessible is a key contribution from the TRKC portal.

CONCLUSIONS

The Transport Research Knowledge Centre has developed into a repository of information on transport research, primarily funded by the European Union Framework Programmes but also by national mechanisms of the countries in the European Research Area. The main achievements of the Knowledge Centre in the structuring, analysis and dissemination of information relate to:

- The extensive coverage of projects and research result, especially of projects which have significant implications for the European policy-making process
- The (potential) use of the link of links to integrate results from other transport research networks
- The adopted and tested streamlined and systematic approach to categorising results
- The use of Thematic Research Summaries to draw results and implications together, theme by theme
- The use of Policy Brochures which focus on the policy implications and the interaction between themes and therefore are of particular interest to European policy-makers.

The development and further enhancement of the Knowledge Centre faces some challenges, such as:

- the challenge of covering national research consistently

- the potential to integrate with other international databases (e.g. TRB)
- the need to do more to transfer results into practice
- the need for better links with education and training.

We intend to address these and expand the capabilities of the Knowledge Centre in a follow on project.

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